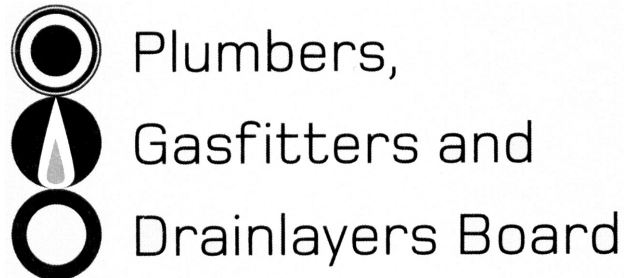


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No. 9194



## REGISTRATION EXAMINATION, JUNE 2011

### **CERTIFYING COMMON**

QUESTION AND ANSWER BOOKLET

Time allowed **THREE** hours

#### **INSTRUCTIONS**

Check that the Candidate Code Number on your admission slip is the same as the number on the label at the top of this page.

Do not start writing until you are told to do so by the Supervisor.

Total marks for this examination: 100.

The pass mark for this examination is 60 marks.

Write your answers and draw your sketches in this booklet. If you need more paper, use pages 19–21 at the back of this booklet. Clearly write the question number(s) if any of these pages are used.

All working in calculations must be shown.

#### **Candidates are permitted to use the following in this examination:**

Drawing instruments, approved calculators, document(s) provided.

Publications, Acts, Regulations, Codes of Practice, or Standards other than the ones provided are NOT permitted in the examination room.

Check that this booklet has all of 21 pages in the correct order and that none of these pages is blank.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION**

Candidates that sat this examination in June 2011 were provided with the following documents:

- New Zealand Building Code clause E2 External Moisture
- Health and Safety in Employment Act

## SECTION A

### QUESTION 1

Name and briefly describe each of the THREE methods of heat transfer.

1 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Total 3 marks

## QUESTION 2

State TWO methods of protecting pipe from each of the following conditions.

(a) Corrosion

1 \_\_\_\_\_

2 \_\_\_\_\_

(1 mark) ☐

(b) Abrasion

1 \_\_\_\_\_

2 \_\_\_\_\_

(1 mark) ☐

**Total 2 marks** ☐

### QUESTION 3

(a) Give FOUR checks that should be carried out before a suspended scaffold is used.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

(2 marks)

(b) Give FOUR factors that can shorten the life of fall arrest equipment.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

(2 marks)

(c) State TWO injuries that can be caused by a compressed air plant/system if it is not maintained or used correctly.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_

(2 marks)

**Total 6 marks**

#### QUESTION 4

- (a) Draw and label a diagram showing an EPDM rubber boot flashing on a 50 mm diameter pipe penetrating a corrugated metal roof that meets the minimum requirements of the New Zealand Building Code.

(4 marks)

☐

- (b) State FOUR factors that must be considered when a soaker flashing is being designed for a pipe penetration through a corrugated metal roof.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

(2 marks)

☐

#### QUESTION 4 (cont'd)

- (c) Complete the table below to give the maximum wind speed of each type of zone according to the New Zealand Building Code clause E2 External Moisture.

Wind Zone	Maximum Wind Speed
Low Wind Zone	
Medium Wind Zone	
High Wind Zone	
Very High Wind Zone	

(2 marks)

- (d) According to the New Zealand Building Code clause E2 External Moisture, water is not permitted to run-off from stainless steel to two materials.

State these TWO materials.

1 \_\_\_\_\_

2 \_\_\_\_\_

(2 marks)

- (e) An access box containing isolating valves is installed penetrating an external wall. The box is 250 mm wide and its depth is half that of the wall.

State THREE specific requirements of this penetration that must be met to comply with the New Zealand Building Code clause E2 External Moisture.

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

(3 marks)

**Total 13 marks**

## QUESTION 5

(a) State THREE conditions that allow a Health and Safety Inspector to issue an infringement notice.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_

(3 marks)

(b) Give FOUR means of issuing a prior warning of an infringement offence.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

(4 marks)

(c) Give the SIX factors to be taken into account by an inspector when determining the amount of an infringement fee.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_

(3 marks)

(d) State the condition under which an employee may refuse to perform dangerous work.

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(1 mark)

**Total 11 marks**



## QUESTION 6

- (a) A certifying plumber/gasfitter has employed a trainee who now holds a limited certificate.

State the length of time the trainee must work in the presence of the certifying plumber/gasfitter.

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(1 mark)

- (b) Name the FOUR licence categories for which workers must be supervised and have their work verified by a certifying plumber/gasfitter.

1 

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2 

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3 

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4 

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(4 marks)

**Total 5 marks**

## QUESTION 7

- (a) The New Zealand Building Code requires that buildings shall be constructed to maintain structural stability during a fire.

Give THREE reasons why the stability of the building must be maintained.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_

(3 marks)

- (b) A 40 mm plastic pipe is to penetrate a fire rated hollow core wall.

Draw and label a cross-section of the wall showing a solution that will enable the wall's fire rating to be maintained.

(4 marks)

**Total 7 marks**

## QUESTION 8

(a) Describe in detail how each of the following types of ventilation systems operates.

(i) Mechanical extract ventilation.

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(3 marks)

(ii) Mechanical positive pressure/ forced air ventilation.

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(3 marks)

(iii) Mechanical heat recovery ventilation.

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(3 marks)

(b) Name the type of mechanical ventilation system shown in the plan in Question 9.

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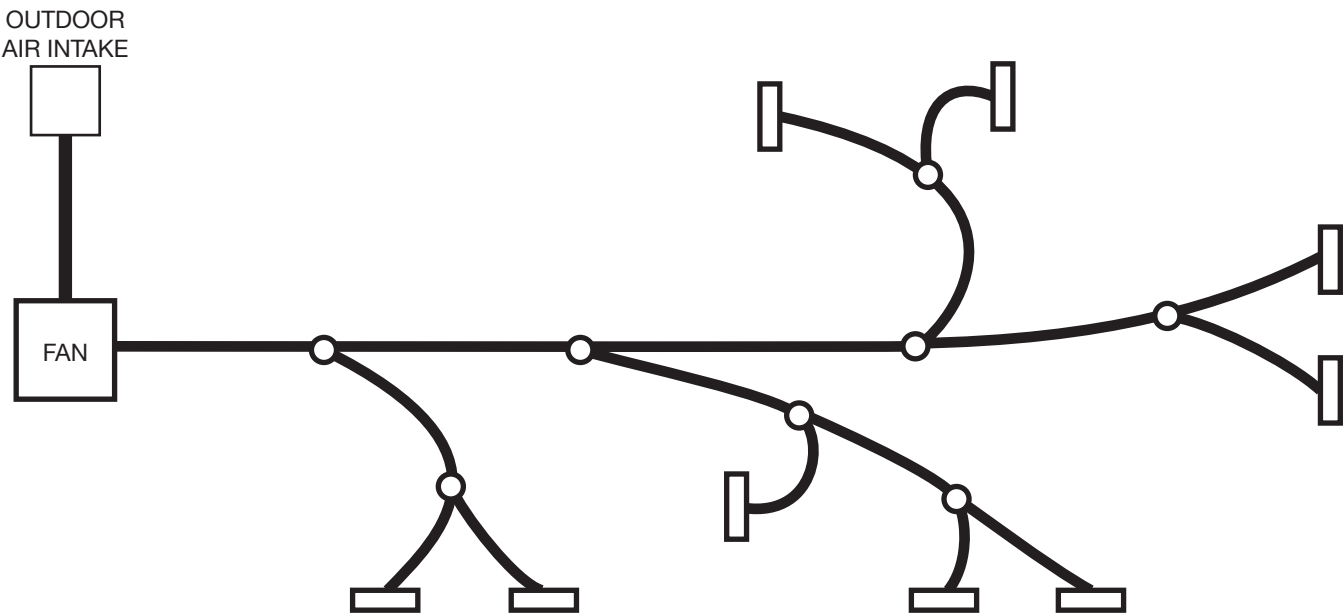
(1 mark)

**Total 10 marks**

QUESTION 9

The plan below shows the layout for an air movement system within a dwelling. The ducting system is to be designed to deliver 20 L/s of air from each outlet.

- 150 mm ducting will deliver 20 L/s
- 200 mm ducting will deliver 50 L/s
- 250 mm ducting will deliver 120 L/s
- 300 mm ducting will deliver 260 L/s
- 350 mm ducting will deliver 300 L/s



Every section of ducting in the plan is required to be 3 m long.

One roll of duct tape will join five connections.

Complete the table below for the quantities required for the system.

Ducting Lengths	Quantity	Branch Take Offs	Quantity
150 mm × 3 m		200 × 150 × 150	
200 mm × 3 m		250 × 200 × 200	
250 mm × 3 m		250 × 200 × 150	
300 mm × 3 m		250 × 250 × 250	
350 mm × 3 m		300 × 250 × 250	
Rolls of Tape		300 × 300 × 200	
		300 × 250 × 200	
		350 × 300 × 250	
		350 × 300 × 200	

Total 10 marks

## QUESTION 10

- (a) Some closed circuit hot water radiator systems work under high pressure.

Give TWO benefits of the system being pressurised.

1 \_\_\_\_\_

2 \_\_\_\_\_

(2 marks)

- (b) Give FOUR factors regarding the installation of flexible ducting that can affect the performance of a warm air heating system.

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

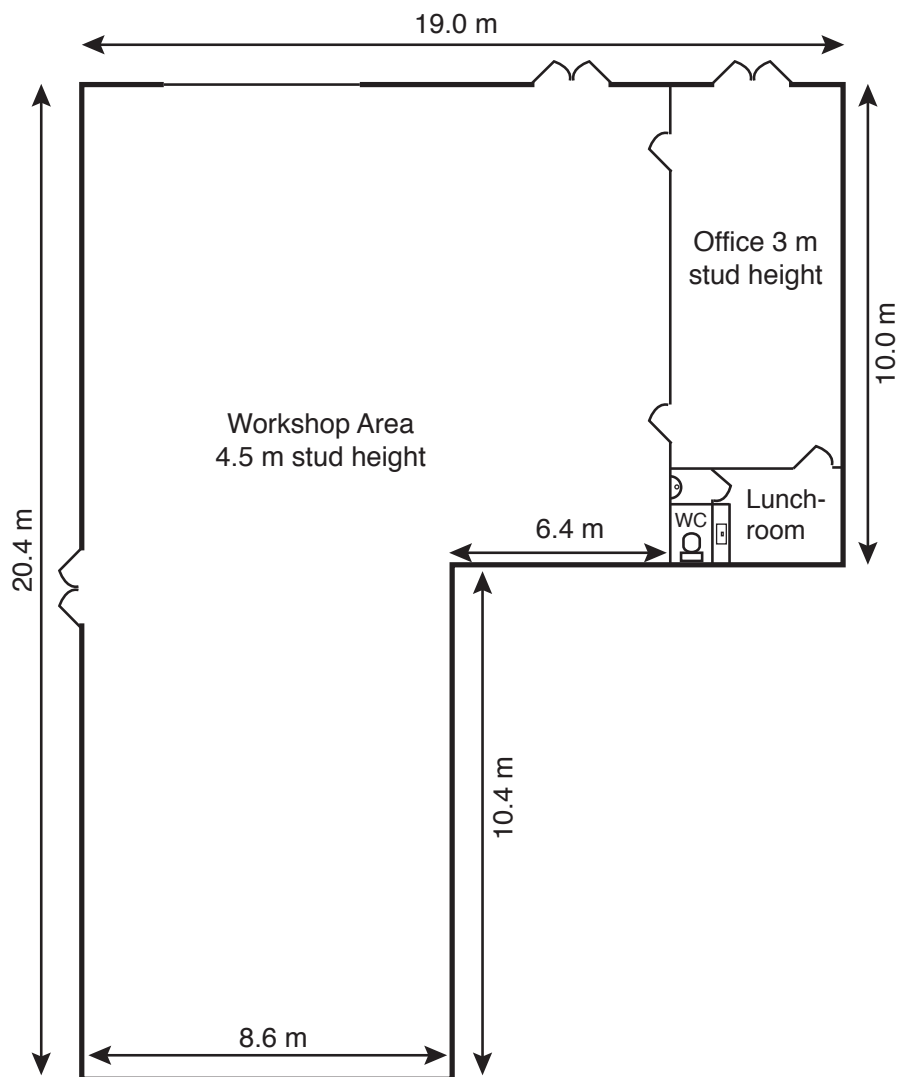
4 \_\_\_\_\_

(4 marks)

**Total 6 marks**

### QUESTION 11

The diagram below shows a plan of a mechanical service centre. A ventilation system is required for the workshop area of the service centre. The workshop requires 5 air changes per hour.



Calculate how many litres of air per second the ventilation system is required to deliver.

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Total 6 marks

## QUESTION 12

- (a) State the term used for a hazard that has the potential to cause serious harm.
- 

(1 mark)

- (b) Draw a diagram showing the THREE requirements stated in NZS 3604: Timber-Framed Buildings that must be met when drilling holes in wooden floor joists.

(4 marks)

**Total 5 marks**

## SECTION B

Answer the following multiple-choice questions by writing your answer (A, B, C, D or E) in the box provided after each one of the questions.

Each correct answer in this section of the examination is worth 1 mark.

Note that should your choice of answer be unclear in this section of the examination no marks will be awarded for that question.

1. Which of the following is NOT notifiable work?

- A Work where workers could fall 5 m or more, excluding work on a two-storeyed house, or work on a power or telephone line, or work carried out from a ladder only, or maintenance or repair work of a minor or routine nature.
- B The erection or dismantling of scaffolds from which a person could fall 3 m or more.
- C Those excavations where the excavated face is steeper than 1 horizontal to 2 vertical.
- D Any construction work where explosives are used or stored.
- E Work such as diving, where construction workers breathe air or any other gas that has been compressed or is under pressure.

2. Which organisation must an employer contact when intending to perform notifiable work?

- A Ministry of Economic Development.
- B Plumbers, Gasfitters and Drainlayers Board.
- C Territorial Authority.
- D Department of Labour.
- E Department of Building and Housing.

3. To comply with the New Zealand Building Code, what is the minimum length of time for which an accessible flashing installed to seal a roof penetration must perform?

- A 5 years.
- B 10 years.
- C 15 years.
- D 25 years.
- E 50 years.



4. When a practising licence holder changes address, within what period must the Registrar be notified?

- A 10 days.
- B 15 days.
- C 1 month.
- D 3 months.
- E 6 months.

☐

5. A practicing licence holder is summarily convicted of not notifying the Registrar of a change of address within the required time.

What is the maximum fine the licence holder is liable for?

- A \$500
- B \$700
- C \$1,000
- D \$1,500
- E \$3,000

☐

6. Which organisation administers the Building Act?

- A Territorial Building Authority.
- B Building Research Association of New Zealand.
- C The Department of Building and Housing.
- D The Master Builders Association.
- E The Building Industry Authority.

☐

7. An employer must allow a health and safety representative how much paid leave each year to attend health and safety training?

- A 1 day.
- B 2 days.
- C 3 days.
- D 5 days.
- E 7 days.

☐

8. What is the maximum total number of days' paid leave that an employer with 130 employees is required to allow each year for health and safety training?

- A 2
- B 6
- C 17
- D 19
- E 35

☐

9. Any person affected by a health and safety inspector's notice may appeal against it to a District Court on the grounds that it is unreasonable within how many days?

- A 2
- B 5
- C 7
- D 10
- E 14

☐

10. In what situation is an election for a health and safety representative is not required?

- A There is only one candidate for the position.
- B There are fewer than 30 employees at the company.
- C The employer chooses the representative.
- D The union decides a representative is not required.
- E The company has been operating less than one year.

☐

11. In relation to the Health and Safety in Employment Act, to whom is a hazard notice issued?

- A Employer.
- B Health and Safety Representative.
- C Employees.
- D Local Territorial Authority.
- E Independent Contractors.

☐

12. An employee needs time off work due to a work related injury.

What obligation does the employer have regarding paying the employee during this time?

- A The employer must pay annual sick pay for the first week to compensate the employee for the amount that would have been earned in that week.
- B The employer must pay annual sick pay for the first week to compensate the employee at 80% of what would have been earned in that week.
- C The employer must pay for the first week to compensate the employee at 80% of what would have been earned in that week.
- D The employer must pay for the first two weeks to compensate the employee at 80% of what would have been earned in those two weeks.
- E The employer must pay annual sick pay for the first three weeks to compensate the employee at 80% of what they would have been earned in those weeks.

☐

13. Which of the following is the definition of an alternative solution in relation to the New Zealand Building Code?

- A A performance based standard that states how completed work and its parts must perform.
- B A custom designed method that is not included in the Building Code but will fulfil the requirements of the code.
- C A pre-approved method of compliance that is included in the Building Code.
- D A design solution, calculation or test procedure that has been approved and if used will guarantee an installation will comply with the Building Code.
- E A statement supplied by or on behalf of any applicant for a building consent.

☐

14. Which of the following is the definition of an acceptable solution in relation to the New Zealand Building Code?

- A A pre-approved method of compliance that is included in the Building Code.
- B A performance based standard that states how completed work and its parts must perform.
- C A custom designed method that is not included in the Building Code but will fulfil the requirements of the code.
- D A design solution, calculation or test procedure that has been approved and if used will guarantee an installation will comply with the Building Code.
- E A statement supplied by or on behalf of any applicant for a building consent.

☐

15. Which statement best describes velocity in relation to plumbing/gasfitting?

- A The decrease in pressure from the point of supply to the outlet.
- B The speed at which the substance flows in pipework.
- C The pressure available at the point of supply.
- D The pressure at which a substance is while flowing.
- E The volume of a substance moving through a pipe.

☐

16. Free fall distance is the distance someone will fall before a fall arrest system begins to arrest the fall.

The free fall distance should not exceed what height?

- A 1.0 m.
- B 1.5 m.
- C 2.0 m.
- D 2.4 m.
- E 2.7 m.

☐

**Total 16 marks**

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For Examiner's use only

Question number	Marks	Marks
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
Section B		
Total		